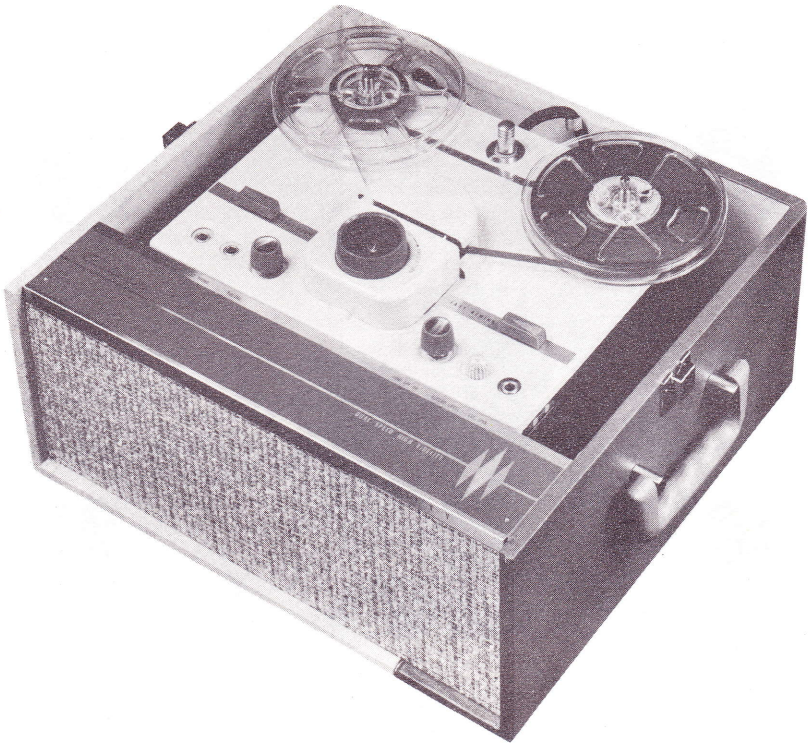
COLUMBIA RECORDS
MODEL 560, A



COLUMBIA RECORDS
MODEL 560, A

General Information

Columbia Models 560 and 560A are mechanically alike. The major difference between the two models is in the head used. Model 560 uses a single unit record-erase head while model 560A uses a two unit record-erase head.

Models 560 and 560A are designed to record and play two tracks of material on standard width recording tape. This doubles the recording and playing time without loss of quality or frequency response. Recordings can be made from a phonograph, radio or television receiver, in addition to those made directly from the microphone.

These recorders have two speeds, 3 3/4" and 7 1/2" per second. Using both tracks, the recording times are as follows:

REEL SIZE	3 3/4" SPEED	7 ½" SPEED
5" (600 ft.)	1 hour	½ hour
7" (1200 ft.)	2 hours	1 hour.

Models 560 and 560A are designed to operate on 60 cycle, 110-120 volts, AC supply only. Before connecting to a supply line, be absolutely certain that it agrees with the above specifications.

Supplied by:

Columbia Records
799 Seventh Avenue
New York, N. Y.

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

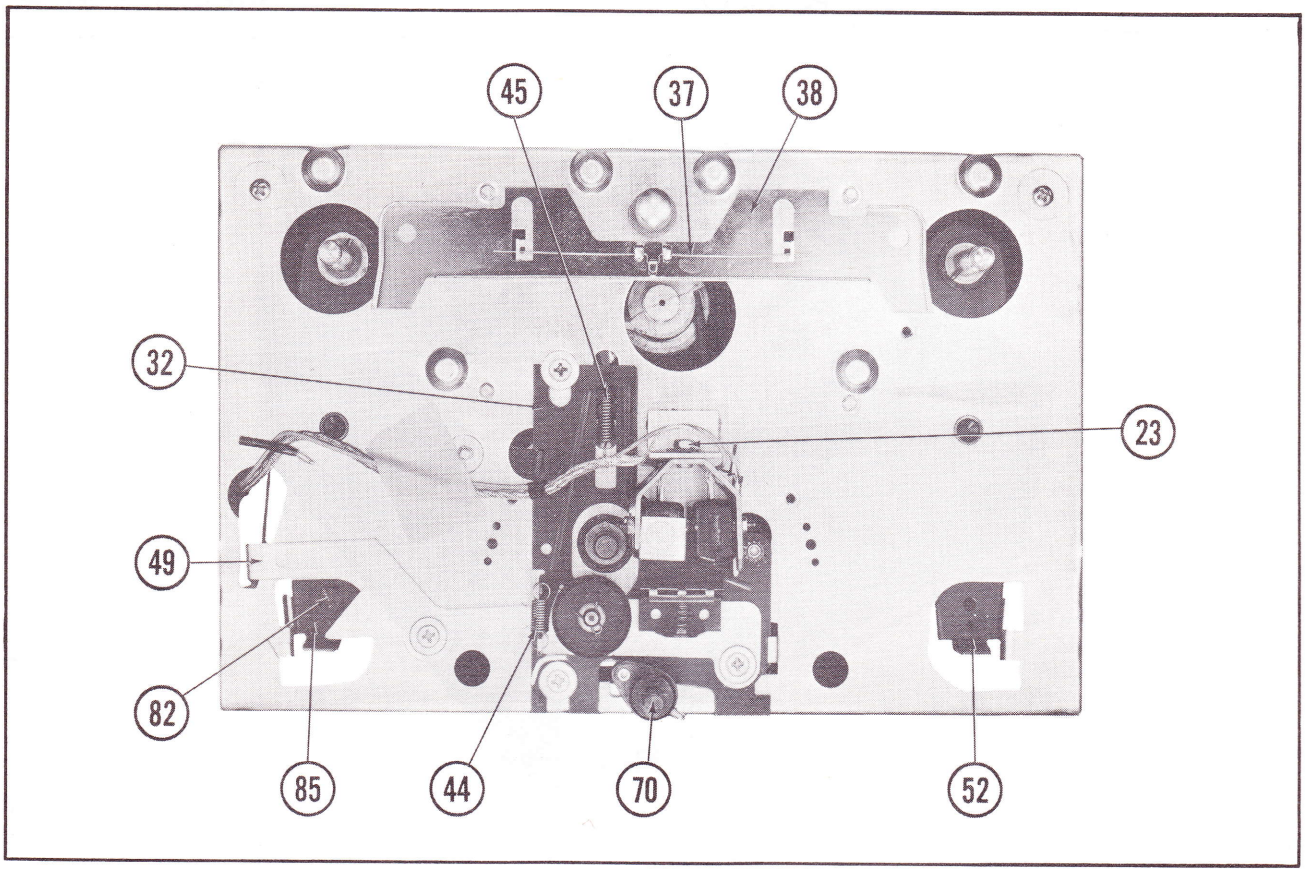


Figure 1

Specifications

Fast Forward And Fast Rewind Speed :

5" Reel, (600 ft.)	55 seconds (Approx.)
7" Reel, (1200 ft.)	105 seconds (Approx.)

Frequency Response:

3 3/4" speed – 65 to 6000 cycles per second
7 1/2" speed – 65 to 8500 cycles per second

Bias and Erase Frequency: 52.5 KC

Bias Voltage:

Shure Head, 10 volts bias
Michicgan Mag. Head, 20 volts bias

Power Output:

2 Watts undistorted
3 Watts maximum

Inputs:

Microphone, 1 meg. impedance
Radio-Phone, .5 meg. impedance

Outputs:

Two internal 5" speakers
External 3.2 ohm speaker
External-low impedance across 3.2 ohm voice coil for external speaker.
External high impedance for external amplifier or monitor in Record or Playback position.

Maximum Reel Size:

7" (1200 ft.)

Operating Instructions

Speed Control

The operating speed setting is accomplished by placing the speed control button (1) in either the "Up" or "Down" position. "Up" for 3 3/4" per second and "Down" for 7 1/2" per second.

CAUTION: NEVER operate this control unless the ON-OFF switch (12) is in the ON position.

Threading Tape

1. Place a reel of tape on the right reel plate (9), and an empty reel on the left reel plate (9) making certain the reel slots engage the pins on the reel plates.
2. Turn the Play-Record control knob (5) in the center of the machine to the fully counterclock-wise position.
3. Unwind about 10" of tape from the reel. Hold a section of the tape straight with both hands and insert the tape in the tape slot making certain that the dull coated side faces the rear of the recorder.
4. Insert the end of the tape into one of the three radial slots in hub of the tape-up reel. Turn the reel several turns, clockwise, until the tape is secured to the reel and all slack is taken up between the reels.

To Record From Microphone

1. Turn the recorder on by rotating the "Tone" control to the right. Allow about 30 seconds for the tubes to warm up.
2. Insert the microphone plug into the "Mike" jack.
3. Adjust the speed control knob (1) for the desired speed – 3 3/4" or 7 1/2" per second.
4. Push down on the Play-Record control knob

(5) as far as it will go. Hold knob down and turn clockwise until it locks.

5. Hold the microphone away from your mouth about 6 to 12 inches and speak in a normal voice. DO NOT SHOUT. Adjust the volume control until the record level indicator flashes on the loudest sounds.

Note: Correct volume level on recording is very important. Too weak a signal, which does not cause flashing on the recording level indicator, will result in weak playback and high background noise. Too strong a signal, which causes continuous flashing of the level indicator, will result in distortion during playback.

To Record From Radio:

Recordings from a radio may be made by one of these methods.

1. Through the microphone by pickup from the radio speaker:

Place the microphone about 6" to 12" in front of the radio speaker. Turn the radio volume control to a normal level. Setting it too high will cause distortion. Turn the radio tone control to treble or high. Set the recording level and record as under "To Record From Microphone".

2. Though a direct connection to the Radio speaker:

Make up a shielded cable with a two conductor phone plug on one end and two alligator clips on the other end. Connect the alligator clips across the voice coil terminals of the radio speaker and insert the plug into the "Radio-Phono" jack. Set the radio volume and tone controls as described above. Set the recording level and proceed as described under "To Record From Microphone".

3. Through a direct connection to the volume control of the radio:

Make up a shielded cable with a two conductor phone plug on one end. Connect the other end across the radio volume control. Insert the phone plug in the "Radio-Phono" jack. Set the recording level and proceed as described under "To Record from Microphone". The radio volume and tone controls do not affect this set up, consequently they may be set any place.

To Record From Record Player

1. If the Record Player being used has a phone type plug on the pick-up leads, insert it into the "Radio-Phono" Jack. Set the recording level and proceed as listed under "To Record From Microphone".

2. If the Record Player has a standard pin type plug, which is more common, an adapter is needed. Insert the pin plug into the adapter and plug the adapter into the "Radio-Phono" jack.

To Record From Television Receiver

Use one of the three methods described under "To Record From Radio".

Dual Track Recording

This recorder is designed to record and play on one-half the width of the tape at a time; thereby resulting in two track recording. To record on the other half of the tape remove the full reel from the takeup (left) side, turn reel over and place it on the feed (right) side. In playing or recording you may stop any place and reverse the reels to use the other track.

Fast Forward And Fast Rewind

High speed forward or rewind operation may be obtained by pressing the desired knob (13) toward the head cover. This will wind the tape on the desired reel at a high speed as long as the knob is held in this position.

NOTE: Do not attempt fast forward or rewind operation with the Play-Record control on any setting except neutral position, as damage to the unit or tearing of the tape will result.

Braking

This recorder contains an automatic brake mechanism giving more accurate tape control. To stop the tape at any time, when operating on fast forward or fast rewind, simply release the forward or rewind control. The tape will automatically come to a stop.

To Play A Recording

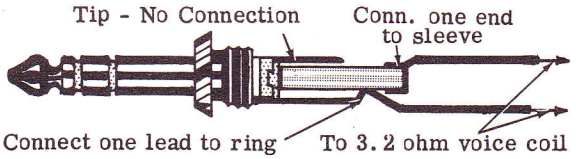
1. Thread the tape as described under "Threading Tape".

2. Turn play-record control (5) clockwise without depressing until it locks.

3. Adjust the "Volume" and "Tone" controls (12) to desired listening level.

To Use An External Speaker

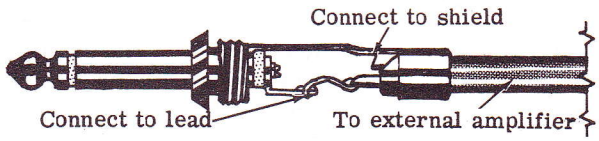
Plug external speaker through a three conductor plug into the "Output Jack". Connect the three conductor plug as shown in sketch.



Caution: Do not insert plug into recorder without external speaker attached.

To Use An External Amplifier

Plug the external amplifier into the "Output Jack" through a two conductor plug connected as shown in sketch



To Edit And Splice Tape

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements can be inserted between selections, etc. Unused tape can be spliced for re-use.

2. For best results cut tape at a slight diagonal, joining ends together with a butt joint and fastening on the glossy side with splicing tape. Trim off any excessive width.

To Erase A Recording

In the record position any recording on the tape is automatically erased before the new recording is put on the tape. Should it be desired to erase a recording without recording new material, follow the normal recording procedure, except set the volume control to the full counter-clockwise position.

Adjustments

Spindle (19 and 48) End Play Adjustment

The spindles should have from 1/32" to 1/16" of up and down movement. To adjust loosen set screw (65) on spindle to be adjusted and move the pulley (55) up or down as required until the correct end play is obtained.

Take-Up Lever Adjustment

Spring (83) on take-up lever (90) controls the timing of the left take-up reel holder (9). With the control knob (5) in the play back position, the take-up reel should start revolving at the same time or a little after the Pressure Roller (43) starts pulling the tape past the head (39).

Check adjustment by placing a fully loaded 7" reel on the take-up spindle. Rewind for about 10 seconds. Move the control knob (5) to the playback position and observe the action described above.

If adjustment is required, bend ear on take-up arm (85) in the position and direction indicated in sketch on exposed view. Care must be exercised when making this adjustment and repeated trials between bends should be made.

Take-Up And Feed Reel Drag

When the control knob (5) is placed in the "Neutral" position the reels should stop promptly with a minimum of overrun. There should be no looping of the tape. With control knob (5) in the neutral position and without reels on the holders, they may revolve slightly, but once the reels are put in place they should not revolve.

Stops, labeled "C" and "D" on figure 2, located on base plate (22) controls the above action. They regulate the amount of return that take-up arm (85) or rewind arm (52) makes after controls have been released; not sufficient return would cause continued Fast Rewind or Fast Forward operation, while too much return would not allow drive belts (88) or (59) to put a drag on the respective pulleys. Bend these stops carefully so as to obtain operation described above. Stop "C" controls the take-up side while stop "D" controls the rewind side.

Head Alignment Adjustment

It is extremely important that the Head (39) be lined up perfectly with the tape. If not the result will probably be low output, track overlap, or loss of high frequencies.

1. Model 560 (SHURE Head)

If the SHURE Head requires replacement the complete assembly composed of the head and head holder should be replaced. The head holder is adjusted individually to the head and sealed at the factory. When installing head (39A) observe the following precautions:

HEAD HEIGHT: Place a .179" gauge (between 11/64" and 3/16") near the mounting bracket and between base plate (22) and bottom of head holder. Push down on head (39A) and tighten set screw (23). Remove gauge.

An alternate method of adjusting the head height when a gauge is not available follows:

a). Remove the pressure shoe assembly (36) from the pressure bracket so the head can be observed through the opening in the pressure bracket.
b). Align head (39A) so the bottom of the head opening is at the same level (or slightly higher) as the corresponding bottom of the opening of the pressure bracket.
c). With the unit pulling tape, the tape should approach the take-up reel nearly centered between the flanges of the reel. If the tape runs against the bottom flange it is an indication that the head is too low.
d). Make "Output Response" adjustment as described in Section 3 below.

2. Model 560A (Michigan Magnetic Head)

On units using the Michigan Magnetic Head a simple alignment procedure is as follows:

a). Place a full reel of tape on the right hand spindle (19) and thread tape. See "Threading Tape".
b). Pull tape tight against Heads (26) and (28) by rotating one reel while holding the other reel.
c). Both heads should then be positioned so the top edge of the tape is exactly even with the bottom edge of the ground down "flat" section on the face of the heads.
d). When in this position both heads should also be perpendicular to the bracket vertically and horizontally.
e). The faces of the heads should be in line with each other so as to present a flat surface to the tape, i.e. one head should not protrude further forward than the other.

3. Output Response

To make this adjustment a tape on which a 3000 cycle note has been recorded by a unit known to be in good operating condition will be required.

Connect an output meter, or AC voltmeter, across the speaker voice coil of the unit to be adjusted. While playing back the 3000 cycle note tape, pivot head (39) back and forth on mounting screw (23) until maximum amplitude on output meter is achieved. Make certain that head height has not been changed.

If a 3000 cycle tape cannot be make, use a recording with high note content to make the adjustment described above.

4. Track Overlap

This should be checked by first making a recording on a blank tape with the unit being checked.

Do not rewind the tape, merely reverse the reels and play back the other track.

There should be no sound but, if what is heard is backwards, there is track overlap. To correct this, it will be necessary to adjust the tape guide on the side of the head holder by bending it upwards. This should move the tracks further apart.

Switch Cam Adjustment

The Play-Record Switch in the amplifier chassis is normally held in the play position by a spring located on the switch arm. When cam on the end of the control shaft (70) actuates switch, it should move the switch far enough to allow all circuits to be switched from Playback to Record.

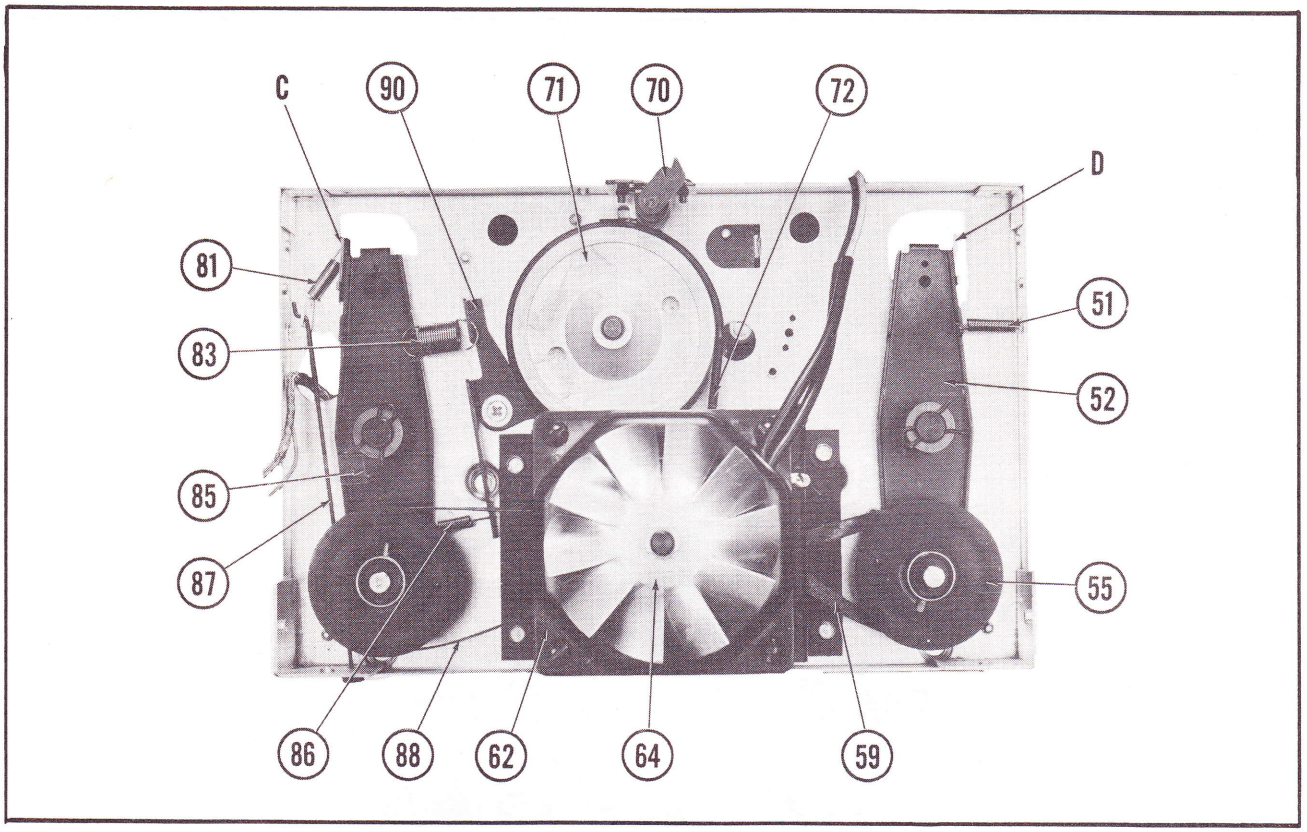


Figure 2

If adjustment is required proceed as follows:

1. Loosen set screw (33).
2. Carefully detach one end of switch spring.
3. Push down on control knob (5) and turn it clockwise to the Record position.
4. Manually move switch cam (70) until first slide contact touches only the first two wiper contacts. At all times during this step switch cam (70) must touch switch cam at end at switch slide.
5. Move pusher stud (34) to the "Record" position and tighten set screw (33).
6. Reconnect switch spring.

Oscillator Coil Adjustment

If the oscillator coil (L1) is replaced, the setting of the adjustable slug should be checked as follows:

1. Connect a frequency meter between point 2 of the erase head and ground.
2. Turn volume and tone controls on.
3. Set the Play-Record knob (5) to the "Record" position.
4. Adjust the oscillator slug for a 52.5 Kc reading on the meter (A non-metallic screwdriver should be used for this adjustment).

Hum Balance

When either the 12AX7 tube or the Head (39) has been changed the setting of the hum balancing control should be checked. This can be done as follows:

1. Connect an A.C. V.T.V.M. across the speaker coil. The meter's lowest scale should have a .1 volt reading at full scale deflection, or at least 1/3 of full scale.
2. Turn volume control and tone control fully clockwise.
3. Set control knob (5) to the playback position.
4. Adjust the hum balance control for a minimum reading. This reading should not exceed .1 volt.

Lubrication

The lubrication applied at the time of manufacture should be sufficient for a long period of time. In cases of unusual use, high operating temperatures, or the replacement of a part, lubrication may be required. Approximately once a year lubricate as follows:

A. With No. 20 Motor Oil

1. Bushing shaft for take-up arm (85).
2. Bushing shaft for rewind arm (52).
3. Bearing for take-up spindle (48).
4. Bearing for feed spindle (19).
5. Bearing for capstan shaft and flywheel (71).
6. Shaft for pressure roller (43).

B. Staput #312 Grease or Lubriplate

1. Bearing surfaces and right guide surface of slide plate (32).
2. Pusher stud (34).
3. Bearing surfaces of indexing arm (31).

C. No Lubrication

1. Motor (62).
2. Drive surfaces of flywheel (71).
3. Drive belts, (59), (72) and (88). In the event oil is thrown on these belts, clean with a

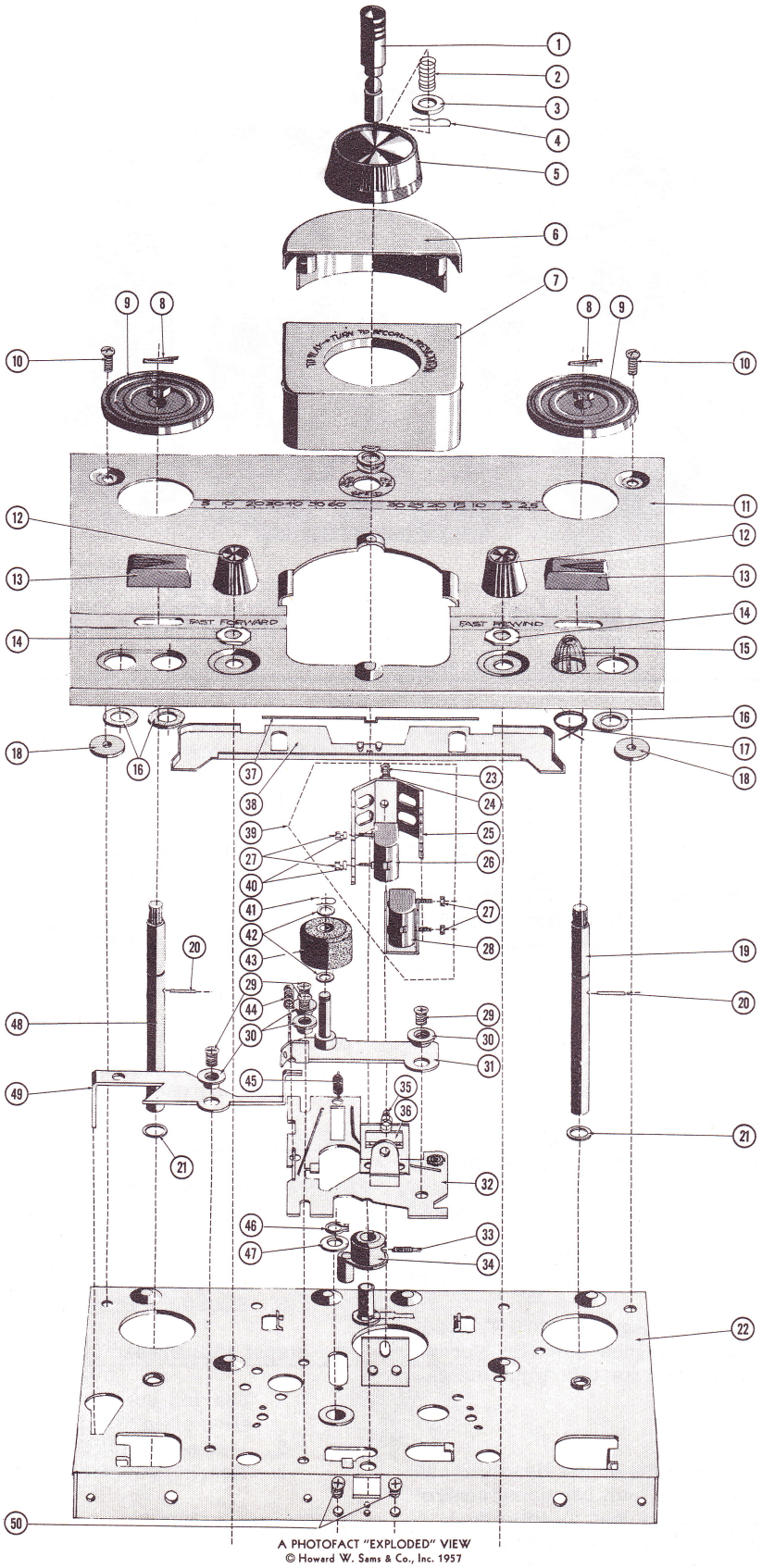


Figure 3A. Exploded View of Parts Above Baseplate

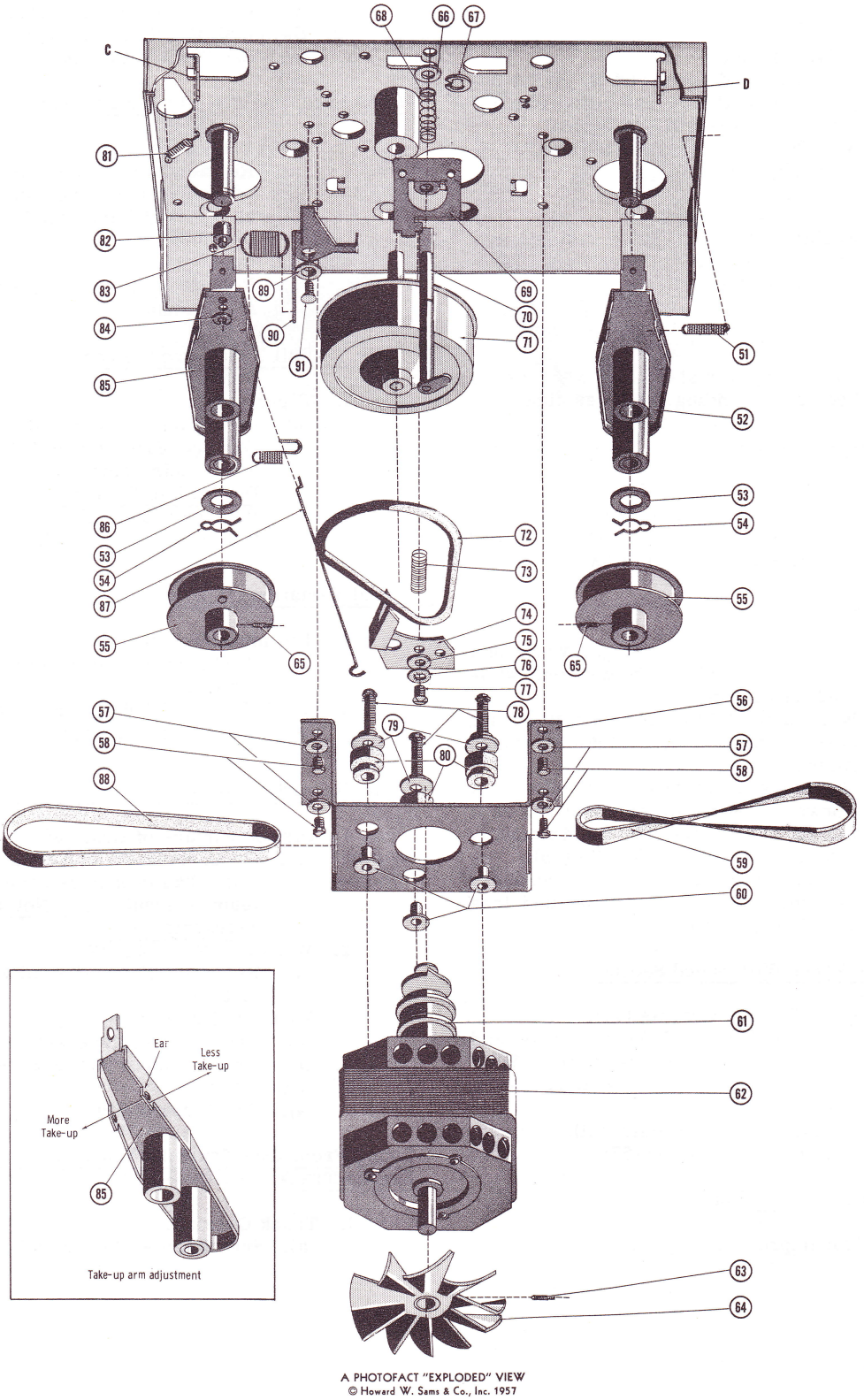


Figure 3B. Exploded View of Parts Below Baseplate

petroleum solvent.
Do Not Use Carbon-Tetrachloide.

TROUBLES

Improper Tape Take-up

1. Spindle (48) binding.
   a). Lubricate and check end play. See adjustment section "Spindle End Play".
2. Improper take-up spring (83) action.
   a). See "Take-up Lever Adjustment".
3. Drive belt slipping.
   a). Clean pulleys.
4. Broken drive belt.
   a). Replace belts. Check adjustments "Take-up Lever Adjustment" and "Take-up and Feed Reel Drag".

Fails to Fast Forward Properly

1. See above except for step 2.
   (a) See corresponding remedies above.

Fails to Fast Rewind Properly

1. See above except for step 2.
   (a) See corresponding remedies above.
   CAUTION: When replacing drive belt (59) be sure to give it a half-twist.

Stalling or Binding

1. Speed control (1) setting changed while unit not turned on. This should be done only while motor (62) is rotating.
   a). With motor (62) turned on try moving Speed Control (1) up and down several times.
   b). Should the above fail, try holding Fast Forward Control to the left as far as it will go, and with the other hand manually rotate Take-up Reel Spindle (48).
   c). If binding continues it will be necessary to remove unit from cabinet and free any binding action.

Speed Does Not Agree With Speed Setting.

1. Bent Speed Control Bracket (74).
   a). Straighten bracket (74) so that upper and lower fingers are equidistant from drive belt when belt is in normal operating position.
2. Broken "ears" on Drive Pully (61).
   a). Replace entire motor (62).

Tape Creeps Out Of Tape Slot

1. Head (93) improperly adjusted.
   a). See "Head Alignment Adjustment".

Plays Back But Does Not Record

1. Bad component.
   a). Check voltage and resistance readings.
2. Switch slide not contacting proper terminal.
   a). See "Switch Cam Adjustment".

Does Not Completely Erase Previous Recording

1. Bad 6V6GT tube.
   a). Replace tube. This tube may function properly as a power amplifier but not as an oscillator which is needed for erasing.
2. Bad Head.
   a). Replace head following "Head Alignment Adjustment".

Fails To Pull Tape Across Head

1. Slippage.
   a). Clean drive pulley (61), Capstan shaft (71) and Pressure Roller (43) surface with a petroleum solvent.
   Do Not Use Carbon-Tetrachloride.
   Replace roller (43) or rubber belt (72) if they appear to be oil sooked.

Speed Variation Or Wow

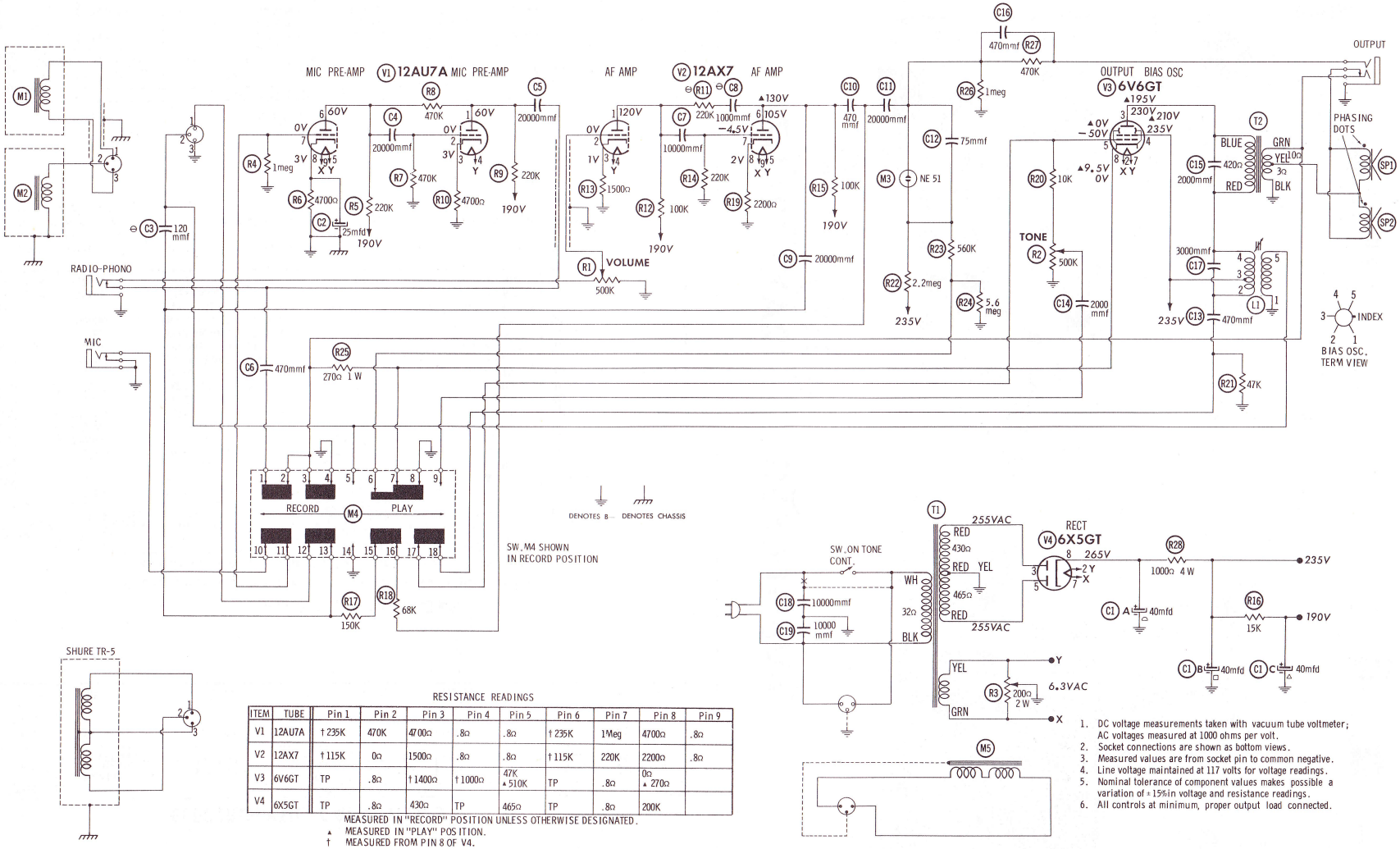
1. Too much feed reel drag.
   a). See "Take-up and Feed Reel Drag" Adjustment.
2. Tight Feed and Take-up Spindles.
   a). See "Improper Tape Take-up".

Weak Recording Or Weak Playback Or No Sound

1. Dirt on surface of Head (39).
   a). Clean surface with a clean lint free cloth which has been moistened with a petroleum solvent. Do Not Use Carbon-Tetrachloride.
2. Weak or dead head (39).
   a). Replace following "Head Alignment Adjustment".
3. Weak or dead tube.
   a). Check and replace weak tube.
4. Open "MIKE" input jack and "Radio-Phono" input jack.
   a). Check continuity.

Sound From One Track is Heard While Playing Back Second Track.

1. Track Overlap.
   a). See "Head Alignment Adjustment".



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7A	†235K	470K	4700Ω	.8Ω	.8Ω	†235K	1Meg	4700Ω	.8Ω
V2	12AX7	†115K	0Ω	1500Ω	.8Ω	.8Ω	†115K	220K	2200Ω	.8Ω
V3	6V6GT	TP	.8Ω	†1400Ω	†1000Ω	47K ▲510K	TP	.8Ω	0Ω ▲270Ω	
V4	6X5GT	TP	.8Ω	430Ω	TP	465Ω	TP	.8Ω	200K	

MEASURED IN "RECORD" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "PLAY" POSITION.
† MEASURED FROM PIN 8 OF V4.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

COLUMBIA RECORDS
MODEL 560, A

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mike & Playback Preamp.	12AU7A	
V2	AF Amp.	12AX7	
V3	Output-Bias Osc.	6V6GT	
V4	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬40	300	770088	AFH4-02-10	BO450	WQ230	TMT-23	D-130	TVL-4575
B	■40	300			BR4035			FM-4540	
C	▲40	300							
C2	25	25	770003	PRS25V25	BBR25-25	TC26	TD-25-25	FM-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

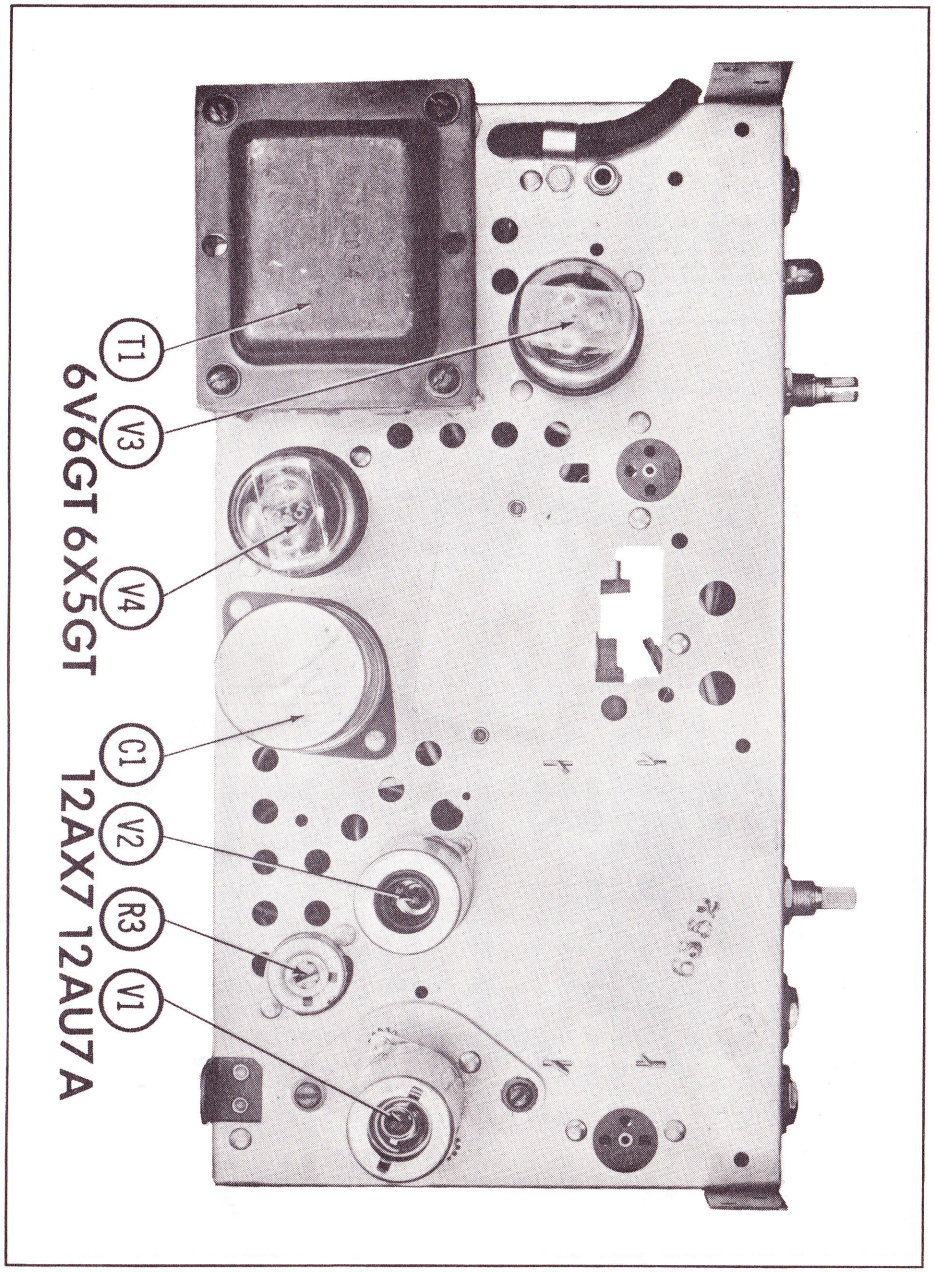
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	120		770164	N750-SI 120	TCN-120	C10T12U	TC7-120			Note 1
C4	20000		770095	BPD-02	DD-203	BYB6S2	ED-02	GEM-612	5HK-S2	
C5	20000		770095	BPD-02	DD-203	BYB6S2	ED-02	GEM-612	5HK-S2	
C6	470		770090	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C7	10000		770096	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	1000		770140	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	Note 2
C9	20000		770095	BPD-02	DD-203	BYB6S2	ED-02	GEM-612	5HK-S2	
C10	470		770090	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C11	20000		770095	BPD-02	DD-203	BYB6S2	ED-02	GEM-612	5HK-S2	
C12	75		770097	SI 75	DD-750	L10Q75	ED-75	UC-5475	5GA-Q75	
C13	470		770090	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C14	2000	1000	770110	P1088N-002	DD-202	BYA10D2		GEM-1022	10TM-D2	
C15	2000	1000	770110	P1088N-002	DD-202	BYA10D2		GEM-1022	10TM-D2	
C16	470		770090	BPD-00047	DD-471	BYA10T47	ED-470	UC-5447	5GA-T47	
C17	3000			1467-003	DD-302	1W5D33	ED-003	UC-523	1FM-23	
C18	10000	1500	770105	P1688N-01	DD16-103	CUB10S1		GEM-1611	16TM-S1	
C19	10000	1500	770105	P1688N-01	DD16-103	CUB10S1		GEM-1611	16TM-S1	

Note 1. Some versions of this model may use a 75MMF, 600V ceramic disc (10%) (Part #770097) in this application.
Note 2. Some versions of this model may use a 750MMF, 600V ceramic disc (10%) (Part #770094) in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	740051	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	500K	½	740052	B-60	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R3	200Ω	2	740045					Hum balance-wire wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Columbia Records PART No.	IRC PART No.	
R4	1Meg		760001	BTS-1Meg	
R5	220K		760036	BTS-220K	
R6	4700Ω		760017	BTS-4700	
R7	470K		760037	BTS-470K	
R8	470K		760037	BTS-470K	
R9	220K		760036	BTS-220K	
R10	4700Ω		760017	BTS-4700	
R11	220K		760036	BTS-220K	Note 1
R12	100K		760010	BTS-100K	
R13	1500Ω		760003	BTS-1500	
R14	220K		760036	BTS-220K	
R15	100K		760010	BTS-100K	
R16	15K		760027	BTS-15K	
R17	150K		760064	BTS-150K	
R18	68K		760062	BTS-68K	
R19	2200Ω		760047	BTS-2200	
R20	10K		760019	BTS-10K	
R21	47K		760013	BTS-47K	
R22	2.2Meg		760040	BTS-2.2Meg	
R23	560K		760039	BTS-560K	
R24	5.6Meg		760054	BTS-5.6Meg	
R25	270Ω	1	760115	BTA-270	
R26	1Meg		760001	BTS-1Meg	
R27	470K		760037	BTS-470K	
R28	1000Ω	4	760304	PW4-1000	

Note 1. Some versions may use a 270K resistor.

COILS

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Columbia Records PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Bias Osc.	700080				Includes C17

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ⓐ.37A	480VCT .056A	6.3V ⓐ1.6A		700054	P9213	P-3048	PM-8419	26R31U	R-8B ①

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5000Ω	3-4Ω tap ⓐ 1.6Ω	700071			A-3825①			① Drill one new mounting hole.

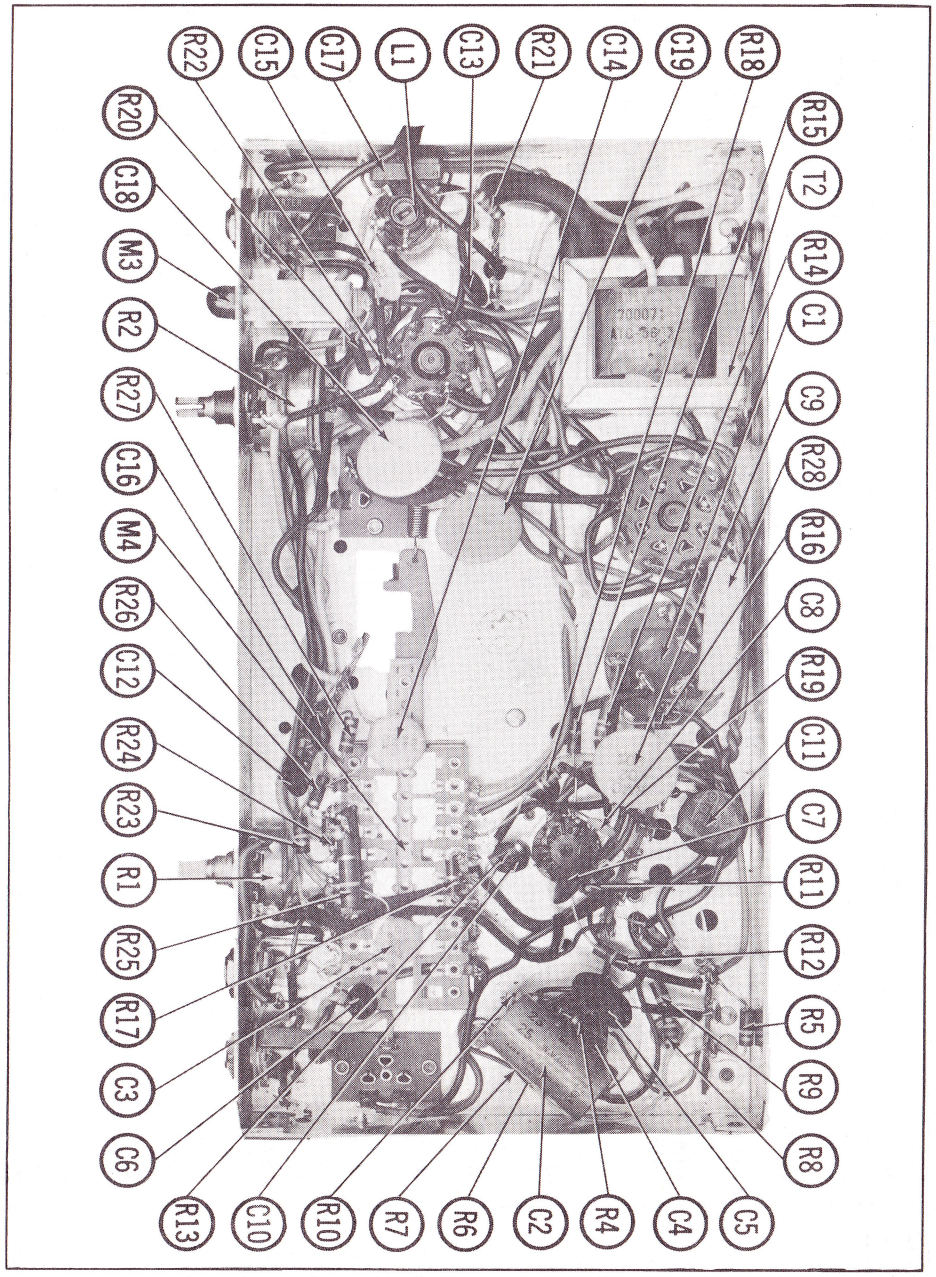
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Columbia Records PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	013041 ① ②	5A07 ①	① Parallel and phase.
SP2	5"	PM	3-4Ω	013041 ① ②	5A07 ①	② Alternate part #013383

MISCELLANEOUS

ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M1	Record Head	720151	
M2	Erase Head	720152	
M3	Neon Lamp	730006	NE51
M4	Switch	011301	Record-Play
M5	Motor	011692	
	Knob	310477	Record-Play
	Knob	310475	On-off tone, volume
	Escutcheon	130131	Front Plate
	Cabinet	440416	Includes lid, vent screen

CHASSIS—BOTTOM VIEW



MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	011693	Speed Control, Includes knob & shaft
2	420151	Spring, Two speed control (Upper)
3	320054	Washer, rubber
4	420152	Retainer, Speed Control Shaft
5	310477	Knob, Play-Record Control
6	100920-066	Head Cover, Has knurled tape guides
7	450235	Cover
8	460165	Retainer for Reel Holder (2)
9	012372-6	Reel Holder (2)
10	600242	Screw, Top Plate Mounting (2)
11	100920-066	Top Plate
12	310475	Knob, Volume, and On-off-Tone (2)
13	310476	Knob, Fast Forward and Fast Rewind (2)
14	590021	Hex Nut, #3/8-32 (2)
15	310158	Jewel
16	580132-1	Washer, Fiber (3)
17	420111	Jewel Retaining Spring
18	580037	Washer, Flat (2)
19	011319	Feed Spindle, Includes Roll Pin (1)
20	460228	Roll Pin (2)
21	580141	Washer, Special Steel (See Note A)
22	012383	Base Plate, Includes Staked and Riveted Parts
23	600137	Head Retaining Screw
24	580056	Washer, Flat
25	120041	Head Bracket
26	720151	Record Head (M.M. 3M-20)
27	590052	Hex Nut (4)
28	720152	Erase Head (M.M. 7 EM12)
29	600243	Screw, 6-32 x 1/4 Phil. Flat Head (4)
30	200288	Washer, Slide Button Spacer (4)
31	012328	Pressure Roller Arm
32	012327	Pressure Plate Assy. (Inc. items 29(3), 30(3), 31, 35, 36, 41, 42, 43, 44 & 45
33	600247	Screw, Set, 6-32 x 3/8", "Slab Head"
34	012330	Pusher Stud, Includes set screw (item 33)
35	420104	Spring, Pressure Shoe
36	012907	Pressure Shoe, Includes felt pad (Model 560A)
36A	011316	Pressure Shoe, Includes felt pads (Model 560) (Not Shown)
37	420177	Brake Plate Spring
38	100880	Brake Plate
39	013392	Head Assy., Includes bracket, cable and plug (Model 560A)
39A	011311	Head (Shure), Incl. Head holder, cable and plug (Model 560) (Not Shown)
40	580230	Washer, Flat (2)
41	460111	Retainer, Pressure Roller
42	580143	Washer, Cloth (2)
43	011236	Pressure Roller
44	420174	Capstan Pressure Spring
45	420171	Spring, Slide Plate Return
46	460018	Retainer, Capstan and Flywheel
47	580141	Washer, Special, Capstan & Flywheel (See Note A)
48	011319	Take-up Spindle, Incl. Roll Pin (1)
49	101015	Lever, Foot SW
50	600111	Screw, Mounts Control Shaft (2)
51	420173	Spring, Spindle Arm
52	011330	Rewind Arm
53	580156	Washer, Special Steel (2) (See Note A)
54	460110	Retainer (2)
55	011317	Spindle Pulley (2) Incl. Set screw (Item 65)
56	011739	Bracket, Motor Mount
57	580056	Washer (4)
58	600256	Screw (4)
59	490089	Rewind Drive Belt
60	320018	Spacer, Motor Mounting (3)
61		Drive Pulley (Part of Motor) (Note B)
62	011692	Motor, 115V., 60 Cycles, Incl. pulley (61), cable & plug
63	600213	Screw, Set, 8-32 x 3/16" "Allen", for fan
64	011321	Fan, Motor, Incl. set screw (63)
65	600247	Screw, Set, 6-32 x 3/8" "Slab Head" (2)
66	320059	Washer, rubber
67	460117	Retainer, Control Shaft
68	420109	Spring, Record Release
69	100660	Control Shaft Bracket
70	012324	Control Shaft, Incl. switch cam
71	011694	Capstan, Shaft & Flywheel
72	490087	Rubber Belt, Capstan Drive
73	420151	Spring, Two Speed Control (Lower)
74	100760	Speed Control Bracket
75	580213	Washer, Flat
76	580019	Lockwasher
77	600242	Screw, (6-32 x 1/4 Phillips Pan Head)
78	600245	Screw, Motor Mounting (3)
79	580151	Washer, Motor Mounting (3)
80	320053	Rubber Bushing, Motor Mounting (3)
81	420181	Foot Switch Return Spring
82	200403	Foot Switch Adjust. Cam
83	420186	Take-up Spring
84	580082	Retainer, Foot Switch Adjust. Cam
85	011329	Take-up Arm
86	420172	Brake Spring, Left
87	100967	Foot Switch Linkage Wire
88	490089	Take-up Drive Belt
89	200288	Washer, Slide Button Spacer
90	100809	Take-up Lever
91	600243	Screw

Note A: One or two washers may be used in this location.

Note B: Drive Pulley (61) can not be obtained separately as it is turned on the individual motor shaft.